

WHAT IS CLAIMED IS:

1. A method for the preparation of a cathode active material comprising:
 mixing, milling and sintering materials for synthesis of a compound represented by the general formula Li_xFePO_4 , where $0 < x \leq 1$, and adding a carbon material to the resulting mass at an optional time point in the course of said mixing, milling and sintering;

employing Li_3PO_4 , $\text{Fe}_3(\text{PO}_4)_2$ or hydrates $\text{Fe}_3(\text{PO}_4)_2 \cdot n\text{H}_2\text{O}$ thereof, where n denotes the number of hydrates, as the materials for synthesis of said Li_xFePO_4 ; and
 setting the temperature of a product from said sintering to 305°C or less when said product from said sintering is exposed to atmosphere. setting the oxygen concentration in a sintering atmosphere to 1012 ppm in volume or less at the time point of sintering.

2. A method for the preparation of a non-aqueous electrolyte cell including a cathode having a cathode active material, an anode having an anode active material and a non-aqueous electrolyte, wherein

in preparing said cathode active material, sintering starting materials for synthesis of a compound represented by the general formula Li_xFePO_4 , where $0 < x \leq 1$, are mixed, milled and a carbon material is added to the resulting mass at an optional time point in the course of said mixing, milling and sintering;

Li_3PO_4 , $\text{Fe}_3(\text{PO}_4)_2$ or hydrates $\text{Fe}_3(\text{PO}_4)_2 \cdot n\text{H}_2\text{O}$ thereof, where n denotes the number of hydrates, are used as the starting materials for synthesis of said Li_xFePO_4 ;

and

the temperature of a product from said sintering is set to 305°C or less when said product from said sintering is exposed to atmosphere. the oxygen concentration in a sintering atmosphere is set to 1012 ppm in volume or less at the time point of sintering.

3. The method for the preparation of a non-aqueous electrolyte cell according to claim 2 wherein said non-aqueous electrolyte comprising a non-aqueous electrolyte including a dissolved electrolyte in a non-aqueous solvent.
4. The method for the preparation of a non-aqueous electrolyte cell according to claim 2 wherein said non-aqueous electrolyte is a solid electrolyte.
5. The method for the preparation of a non-aqueous electrolyte cell according to claim 2 wherein said anode is a material capable of doping/undoping lithium.
6. The method for the preparation of a non-aqueous electrolyte cell according to claim 2 wherein said anode is a carbon material.